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BULLETIN
OF THE
TORREY BOTANICAL CLUB

NOVEMBER, 1919

The ferns and flowering plants of Nantucket—XX

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CONCLUSION

The plants of Nantucket enumerated in the catalogue, brought to a close with these pages, number 1,136, including thirty-three natural hybrids. Other probable hybrids and some sixty varieties, mainly such as have received names, have been referred to in the text. Some of these plants that are listed under binomial names are without general botanical consent to be taken as completed species. These, however, are all plants of marked attributes and, however opinions may differ as to the precise status of this one or that, in each case a binomial name has been allowed its sufficient claim unmistakably to denote the plant referred to. This dissembles nothing and has seemed to avoid whatever of factitious precision may inhere in a needlessly composite name. On the other hand forms that pass current under varietal names that seem unduly to honor certain of those variations which, in undefinable number, are common to plants in general, have had only their passing word.

Omitting the hybrids the number of plants formally listed is 1,103.* Of these 746 are native to the island and 362 are introduced.

* This number includes a few mere varieties admitted in the earlier parts of this series, and allows for two species that should be omitted and four here to be added. The eliminations are *Panicum linearifolium* (see Supplementary Notes, ante) and *Bartonia iodandra*. The Nantucket plant discussed under this latter name should be referred to *B. paniculata*—a contracted form in which the anthers

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Included among the introduced plants are some thirty species common in cultivation which, although not to be taken as established, have been found persisting in a wild state. The tendency shown by these plants to stray away from their home gardens may well thus be put on record. Should any of them in time come to take a wider place in the flora the beginning of their history as wild plants would become a matter of interest.

Nearly one half of the introduced species are well naturalized and more than two-thirds of these are widespread, including in their number many of the island's abundant plants. About seventy-five species may be accounted common, forty as frequent, seventy as of occasional occurrence.

Almost everywhere where introduced plants abound a much larger proportion of their species than those of the native plants are confined to a single station or to a very few places, and this is notably the case on Nantucket, notwithstanding that an unusual number of native plants are there thus localized. One hundred and seventy of Nantucket's introduced plants have been found at not more than two or three localities, eighty of them at a single station only.

The town of Nantucket itself with its old gardens, its resting wharves, its streetsides and habitable places for plants that have had a quiet past, has come into a flora very interestingly its own,

are sometimes deep purple, a character hitherto regarded as diagnostic of *B. iodandra*. Some examples, as already intimated, seem to pass into more typical forms of *B. paniculata*, and appear to be similar to the Massachusetts plant reported and figured as *B. iodandra* by Williams (*Rhodora* 2: 55-57. *pl.* 15, *f.* 5. 1900), now regarded, I understand, as *B. paniculata*. Professor Robinson who, with Professor Fernald, has recently examined my Nantucket specimens advises me that they are not *B. ioandra*, and specimens of the latter from Newfoundland which were kindly sent to me, show a plant very unlike anything I have met with on Nantucket and beyond question, as I now see it, a strikingly distinct species.

I am indebted to Miss Albertson for specimens of the four additions to the list, one native and three introduced species, as follows:

STEIRONEMA LANCEOLATUM (Walt.) A. Gray. Monomoy, August 22, 1918, in full flower. Collected by Mr. Merriman.

HELIANTHUS MAXIMILIANI Schrad. Field in Madequet, August 15, 1919. Collected in full flower by Miss Ober.

CENTAUREA JACEA L. Field near Franklin Fountain, August, 1915, and July, 1918.

CENTAUREA MACULOSA Lam. Near Big Mioxes, August 23, 1919. Collected in full flower by Miss Milne.

many of whose plants would be looked for in vain elsewhere on the island. So it is that more than one hundred introduced plants have been reported only from the general district of the town. Additions to this domesticated flora now follow on almost from year to year. Freshly seeded lawns and modern gardens add their new comers, and suburban fields where rubbish has been cast encourage the growth of adventitious plants that take their foothold either transiently or tenaciously as time shall prove.

Among introduced species not everywhere found that are well established in the town flora but are rarely if at all seen elsewhere on the island are the following:

<i>Puccinellia distans</i>	<i>Viola laetecaerulea</i>
<i>Bromus sterilis</i>	<i>Aethusa Cynapium</i>
<i>Carex hirta</i>	<i>Marrubium vulgare</i>
<i>Iris pseudacorus</i>	<i>Physalodes Physalodes</i>
<i>Lychnis dioica</i>	<i>Solanum peregrinum</i>
<i>Chelidonium majus</i>	<i>Tragopogon pratense</i>
<i>Geranium pusillum</i>	<i>Sonchus arvensis</i>

Some rather unusual alien plants have made their appearance within recent years in different parts of the island about abandoned spots where poultry has been kept, their source of introduction doubtless being the prepared chicken feed now in general use. The mixed growth of weeds that throng such places have yielded the following species, very few of which have been found elsewhere:

<i>Vaccaria Vaccaria</i>	<i>Conringia orientalis</i>
<i>Lepidium neglectum</i>	<i>Lappula Lappula</i>
<i>Thlaspi arvense</i>	<i>Amsinckia arenaria</i>
<i>Neslia paniculata</i>	<i>Lithospermum arvense</i>
<i>Erysimum cheiranthoides</i>	<i>Centaurea melitensis</i>

In addition to those abundant naturalized plants that everywhere enrich our flora Nantucket has adopted into its vegetation some less usual species that now, common and wide-spread, assert themselves as characteristic island plants. The following may especially be named:

<i>Alopecurus pratensis</i>	<i>Festuca myuros</i>
“ <i>geniculatus</i>	“ <i>capillata</i>

<i>Aira caryophylla</i>	<i>Trifolium dubium</i>
<i>Carex muricata</i>	<i>Epilobium hirsutum</i>
<i>Salix Smithiana</i>	<i>Centaureum spicatum</i>
<i>Cerastium semidecandrum</i>	<i>Apargia autumnalis</i>
<i>Ranunculus repens</i>	<i>Artemisia Stelleriana</i>
<i>Cytisus scoparius</i>	<i>Arctium tomentosum</i>

The great majority of the introduced species are herbaceous plants of dry and open ground, many of them succeeding in poor and sandy soils. Less than twenty species are plants of moist or wet places and only one is conditioned by saline influences. Eighteen herbaceous species are twining or climbing plants, three species are woody vines and twelve are shrubs. The introduced trees number thirty-two, although only one has become a strong structural element in the flora, this being our native pitch pine which, history tells us, was first planted on Nantucket in the year 1847. Few other introduced trees have made much response to the conditions that Nantucket has offered, although the cockspur thorn is making itself at home there, and the apple, the pear and the hybrid willow (*Salix Smithiana*) are sparingly more or less widespread. The Scotch pine and the European larch have long formed an extensive and increasing growth at the locality where they were originally set out, and at a few places the locust and the silver poplar are well established, but most of the other trees are not much to be considered, and some number only a few examples that have appeared spontaneously and grown up in out-of-the-way places.

At different times in the past collections of trees were brought to Nantucket and set out in certain places which now, long neglected and apart from cared for land, appear like wild tracts covered with their native growth. Both European and American species were used in these plantings and many of them survive, although few have made much growth. Most of these trees have been noted in the text.

Not many of the introduced plants are from elsewhere than Europe and Eurasia, these numbering some two hundred and seventy-five species. Twelve species belong to Asia and nine are tropical American. Japan, China, India, New Zealand and Mexico have each contributed a single species which is, however, either

a scarce weed or a casual estray from cultivation. Included among the introduced plants are also some sixty North American species, all of which are quite certainly not of the island's indigenous flora.

The families represented by all these plants number sixty-three, eleven being foreign to the indigenous Nantucket flora. As many as nineteen have only a single member and the same number not more than two or three. The most numerous family is the Gramineae with fifty or more members, a number subject to considerable increase by taking account of all named varieties. Among the grasses, as in other groups, the absence will be remarked of some species that might well be looked for. As an instance, so common a port and streetside immigrant as *Eleusine indica* has not yet made its way to Nantucket where, it might be thought, the shipping activities of earlier days might long ago have brought it in.

The family most noteworthy in respect of greater representation by alien than by native members is the Cruciferae with thirty-four introduced species and only four that are native. A less marked preponderance of immigrant species is found in the Caryophyllaceae and Fabaceae, these families having respectively nineteen and twenty-five alien members against eight and eighteen, in corresponding order, that are indigenous. The number of introduced species belonging to other well-represented families are as follows: Compositae, 28; Labiatae, 18; Cichoriaceae, 11; Scrophulariaceae, 10; Salicaceae, 10; Solanaceae, 9; Polygonaceae, 9; Chenopodiaceae, 8, and Rosaceae, Ammiaceae and Borraginaceae, 7 each. The largest of the native plant families, the Cyperaceae, numbering eighty-seven species, has only two species that are introduced, both *Carices*, and the third largest native family, the Compositae, to which so many of our immigrant weeds belong, numbers but thirty-two introduced species against seventy-two that are indigenous. The Rosaceae and Polygonaceae also preponderate as native families, possessing respectively twenty-nine and twenty indigenous members and only seven and nine that have come by immigration. Of important native families the Juncaceae and Orchidaceae are, as would be expected, totally unrepresented in the introduced flora, and there is only a single in-

roduced fern, the common polypody, this having somehow found lodgment on the island at a single station.

Among the introduced plants yellow flowers and white flowers greatly predominate, their ratios to the total number being respectively over 31 per cent and 28 per cent. White flowers and yellow flowers likewise predominate in the indigenous flora, but here white-flowered plants are relatively, as absolutely, much more numerous, their corresponding ratio being 39 per cent, that of the yellow-flowered 22 per cent. Next in order among the introduced plants come pink-flowered species, including purple-pinks, 19 per cent; purple and blue-purple, 12 per cent; blue, over 6 per cent. Orange and red are each found in only four species, and green-petaled flowers are no less rare. Eliminating those introduced species that seem to have little chance of permanency the resulting percentages show not much change beyond about 4 per cent decrease in the purple- and blue-flowered species and a corresponding increase in the white-flowered.

As among the introduced plants, so in the native flora flowers of some shade of pink, including those scarcely assignable shades lying between pink and purple, are next most numerous after whites and yellows, making up nearly 17 per cent of the whole. Purple and blue-purple follow with over 8 per cent; blue with nearly 4 per cent; red and orange, the one something over, the other a little under 1 per cent. A wide percentage disparity is found between the native and the introduced plants that bear flowers fairly to be described as green, these numbering less than 1 per cent of the introduced species and over 8 per cent of those of the native flora.

From the nature of the case all these percentages are somewhat approximate, not being susceptible of very exact rendering. Petalous flowers only have been taken into the reckoning.

* * * * *

The indigenous flora of Nantucket has its most interesting side to the botanist in its many species of plants that more especially abound southward on the coastal plain. This is its dominating note. But mixing with these plants of southward range are others which trace through the flora a strain of northward relationship that is all the more sharply defined by the emphasis of contrast.

In its more local aspect two interesting features of the flora that will not long escape the exploring botanist are the large proportion of its plants that are confined to the eastern side of the island and the number of species throughout that are strictly localized.

The eastern side of the island is the more diversified in its topography and natural features, abounding in knolls and hollows, in damp open grounds and straggling swamps beset with crowded shrubbery, and hillsides and banks with their herbage and woody growth descending to numerous small ponds and mossy or peaty bogs. It has also more varied and mature tree growths than are found on the western side and reveals better evidences of former forestation. Accompanying these conditions are more varied and richer soils with their responding plant life, and many of the more southern and more northern plants that belong to the flora have their place only here. Here, too, surviving in the thickets and tree groupings, are little colonies of woodland plants, vestiges, we may suppose, of an earlier flora that had its day in that unrecorded period before the woodlands were destroyed.

Extensive dry plains clothed with low herbaceous vegetation spread over much of the southern side of the island, invaded towards the east by barrens of scrub oak and midway in the island by open formations of young pitch pines advancing from denser growths that earlier made their conquest. Westward towards Hummock Pond are veritable tracts of pine barrens which, however, as a modern feature of the island's vegetation, have merely adopted their plants from the general plains flora, not contributing any distinctive species of their own.* Certain reaches of these plains of darker soil call to mind the Hempstead Plains of Long Island. Like the Hempstead Plains, too, these Nantucket plains have their widely distributed assemblage of particular plants, very few of which do not belong as well to neighboring territory.

* It should be noted that among the Nantucket pines are found a few woodland plants that either do not occur at all elsewhere on the island or are nowhere else at home. It would seem to follow that the advent of these plants, or some of them, must have been subsequent to the introduction of the pines. Four of them that have been reported from only one or two localities are *Polypodium vulgare*, *Corallorhiza maculata*, *Linnaea americana*, and *Hypopitys americana*; three others, that are sparingly scattered, are *Hypopitys lanuginosa*, *Pyrola chlorantha* and *Chimaphila maculata*.

And with few exceptions their characteristic plants are also plants of the Hempstead Plains.*

Among the more interesting are the following:

<i>Schizachyrium scoparium</i>	<i>Helianthemum propinquum</i>
<i>Panicum depauperatum</i>	“ <i>majus</i>
“ <i>meridionale</i>	† <i>Hudsonia ericoides</i>
<i>Aristida purpurascens</i>	<i>Lechea maritima</i>
<i>Agrostis antecedens</i>	<i>Viola pedata</i>
<i>Carex pennsylvanica</i>	† <i>Epigaea repens</i>
“ <i>tonsa</i>	† <i>Arctostaphylos Uva-ursi</i>
<i>Juncus Greenei</i>	<i>Asclepias amplexicaulis</i>
<i>Salix tristis</i>	<i>Agalinis acuta</i>
<i>Aletris farinosa</i>	† <i>Houstonia coerulea</i>
<i>Sisyrinchium arenicola</i>	<i>Nabalus serpentarius</i>
<i>Baptisia tinctoria</i>	<i>Chrysopsis falcata</i>
<i>Cracca virginiana</i>	<i>Solidago memoralis</i>
<i>Lespedeza Bicknellii</i>	<i>Euthamia tenuifolia</i>
<i>Linum intercursum</i>	<i>Sericocarpus linifolius</i>
<i>Polygala polygama</i>	<i>Ionactis linariifolius</i>
<i>Sarothra gentianoides</i>	<i>Aster concolor</i>
<i>Helianthemum dumosum</i>	“ <i>dumosus</i>

Only four of these plants, those marked with a dagger, appear to be wanting on the Hempstead Plains, although the arbutus and the bearberry occur at outlying points. The *Houstonia*, an abundant Nantucket plant, is apparently unknown on Long Island and the *Hudsonia* is a rare plant there.

* * * * *

Over one half of Nantucket's native plants may fairly be accounted as prevailingly more southern in their general distribution. More than one hundred of these reach their northern or eastern limits in Massachusetts, mainly in the Cape Cod region and in the southeastern quarter of the state, and a considerable number of others that pass beyond Massachusetts are reported from no further than southwestern Maine or are of only casual occurrence at more northern or eastern points. Altogether about

* For a very full discussion of the Hempstead Plains and their vegetation, see Harper, The Vegetation of the Hempstead Plains. Mem. Torrey Club 17: 262-286. pl. 7. June, 1918.

one hundred and fifty of these plants extend their northeastern limits, in many cases only locally, into Vermont, New Hampshire or Maine, and over seventy others, some of them unknown in Maine, occur as far to the east as the Canadian Maritime Provinces. A smaller group, very noteworthy in its isolation, are found at the extreme eastern extension of the continent in Newfoundland.*

The following plants of Nantucket do not appear to have been reported from any more northern or eastern point, and a considerable number of others have only within recent years been added to the known flora of the eastern Massachusetts mainland. The names used follow those of the catalogue, although some changes have since been adopted.

<i>Lycopodium alopecuroides</i>	<i>Boehmeria scabra</i>
<i>Naias guadalupensis</i>	<i>Polygonum pennsylvanicum</i> var.
<i>Schizachyrium villosissimum</i>	<i>nesophilum</i>
“ <i>littorale</i>	<i>Persicaria setacea</i>
<i>Panicum virgatum cubense</i>	<i>Amaranthus pumilus</i>
“ <i>Bicknellii</i>	<i>Cardamine arenicola</i>
“ <i>albemarlense</i>	<i>Rubus flagellaris</i>
“ <i>auburnae</i>	<i>Aronia arbutifolia</i>
<i>Chaetochloa versicolor</i>	<i>Ascyrum hypericoides</i>
<i>Agrostis elata</i>	<i>Lechea Leggettii</i>
<i>Elymus halophilus</i>	<i>Opuntia</i>
<i>Eleocharis tricostrata</i>	<i>Vaccinium atlanticum</i>
<i>Scirpus Eriophorum</i>	“ <i>vicinum</i>
<i>Rynchospora Torreyana</i> †	<i>Apocynum pubescens</i>
<i>Carex debilis</i>	<i>Setiscapella subulata</i>
“ <i>incomperta</i>	<i>Viburnum venosum</i>
<i>Arisaema pusillum</i>	<i>Solidago aestivalis</i>
<i>Juncus dichotomus</i>	<i>Euthamia minor</i>
“ <i>aristulatus</i>	<i>Doellingeria humilis</i>
<i>Quercus pagodaefolia</i>	

The similarity of the Nantucket flora to that of southern New

* See, especially, Fernald, A botanical expedition to Newfoundland and southern Labrador (Rhodora 13: 109-162 pl. 86-91. 1911), a paper of absorbing narrative interest apart from its botanical importance.

† One other New England station for this species is known at East Washington, New Hampshire.

Jersey, which has often been remarked, is strikingly brought out by a mere accounting of the number of coastwise plants common to the two regions. More than one hundred and ninety Nantucket plants belonging to the more southern element of the flora occur in the New Jersey Pine Barrens, and over three hundred are plants of the Coastal Plain elsewhere in that state; while all the maritime plants of Nantucket of general southward range, about forty species, are also of the New Jersey flora.*

Over one half of Nantucket's native plants may be classed as common, about one hundred and forty as frequent and about fifty as of occasional occurrence. As many as one hundred and eighty-two have been found at not more than one to three places and, as far as known, nearly ninety of these occur at only a single station, these categories of rarest plants constituting almost one quarter of the native flora. Nearly three-quarters of these have been found only on the eastern side of the island. The total number of species that are thus restricted number one hundred and seventy-five, and forty-five others are mainly of the same local distribution, these together making up nearly 30 per cent of the flora. Not more than thirty-seven species, or 5 per cent of the flora, are found exclusively on the western side of the island.

Nearly 45 per cent of Nantucket's native plants, about three hundred and thirty species, are plants of low grounds, swamps and pond shores, while little more than one quarter are species that thrive best in dry open ground. Less than twenty species are plants primarily of low or wet woods. Other woodland plants number about ninety species, here for the most part keeping to copses and thickets but also, many of them, appearing on the plains and commons, some having very successfully adapted themselves to these unaccustomed dwelling places. Fogs and moisture from the sea from whatever direction the wind may blow must have had an influence in this, and a curious contributing cause may be seen in the habit of growth of one of the plants themselves that belong to these exposed tracts, the abounding bearberry, whose shining evergreen carpet lies broadspread on hill

* See Stone, The Plants of southern New Jersey with especial reference to the flora of the Pine Barrens and the geographic distribution of the species. Rep. New Jersey State Mus., 1910. The statistics above given have been made possible only through consultation of this work.

and plain. This gives winter protection to the soil and in summer a continuous shade and coolness under its low covering for such woodland plants as here and there may find space enough to make their growth.

Nantucket has been called a treeless island and, apart from the town and the scattered farms, the casual tourist might believe this to be true except for the naturalized pines which are now widely in the landscape. Nevertheless, twenty-five to thirty kinds of trees are native to the island, the larger reckoning allowing for those that, shrub-like on Nantucket, are trees in their full growth. In general, however, the Nantucket trees are not prominent in the vegetation, not many rising above a very moderate height, although there are copses and groupings in low grounds where they attain a good woodland size, and in the seclusion of dense thickets is to be found here and there a beech or an oak little noticeable for height but of a girth of trunk that reports a venerable age. Shrubs abound, and in swamps and low grounds are massed into thickets of the most dense and impenetrable character. The number of species that are botanically shrubs is seventy-two, many of them, however, bearing little distinction of aspect from the herbaceous vegetation amid which they grow. There are eight woody climbing vines and the same number of twining herbaceous species. Of other Nantucket plants having their particular habitats fifty-five belong to the salt marshes and twenty are of the coastal sands. Of thirty-three aquatics three only are exclusively maritime.

The number of native families represented in the Nantucket flora is one hundred and thirteen. Thirty-eight have only one species, twenty-seven two or three species, twenty-six four to nine species and seventeen ten to twenty species. Only four families contain over twenty species, the Rosaceae with twenty-nine and the three predominant families, the Cyperaceae, Gramineae and Compositae with eighty-seven, seventy-eight and seventy-two members. Including in the Rosaceae twenty-four hybrid blackberries that have been described (and other combinations among these occur) its actual membership would approach that of the three highly preponderant families. The ferns number twenty-six, belonging to three families, the Ophioglossaceae, five

species, the Osmundaceae, three species, and the Polypodiaceae, eighteen members, including three commonly regarded as strongly marked varieties and one hybrid.

When discussing the introduced plants it was remarked that they included some sixty North American species that were not indigenous on Nantucket. Some forty of these are common plants of the New England mainland and seventeen are of the west and north. Not more than two or three immigrant native species have come to Nantucket by way of the south, and these seem to be little at home and have not spread from their original stations. Here is perhaps a hint that plants of southern conformities may less readily adapt themselves on Nantucket than do species from the north and west, as if the present climatic conditions of the island might not be encouraging to the advance of more southern types. Should this indeed be true it would seem to reveal that those southern affinities now in such clear aspect in the flora of the island are to be referred back to influences not the same as those of today. And there would be accordance in this with those now well understood evidences of an extensive flora of southern derivation belonging to the New England seaboard of Tertiary time, a flora lost to our later day with these broad coastal tracts that now lie beneath the sea.* Yet not wholly lost. We find it still, much of it, we may believe, in the less disturbed flora of our more southern coastal plain, and we find its remnants persisting as the merest fringe along the withdrawn more northern coast-lines of the present day. And isolated on Nantucket it has been preserved to us in that assemblage of southward ranging plants, now a primary element in the general composition of the flora.

Thus, understanding the far back origin of this relationship, we may the more readily believe that Nantucket's possession of southern plants may be little attributable to influences operative at the present day.

There is other evidence than the general absence of immigrant southern plants on the island that would seem to denote conditions less favorable to more southern than to more northern plants.

* See Fernald, *loc. cit.* Also, The geographic affinities of the vascular floras of New England, the Maritime Provinces and Newfoundland. *Am. Jour. Bot.* 5: 219-236. *pl.* 12-14. 1918.

It lies open to the eye on Nantucket that the island is not at all inhospitable to plants of far northern and eastern range, and not a few such species have placed here their outlying southward colonies. And this corresponds in its import to what is true of such of our naturalized plants as have adopted anything like a definite range. Many more Nantucket plants are species whose main colonization in this country is to the northward rather than to the southward. And evidence of like bearing may be seen in this, that many of the island's more southern plants are strictly localized, and, going back, as we may do in certain cases, even to the time of its earliest botanical explorers, have spread not at all from the localities where they were originally found. In the case of coastal plain species an explanation of this is hardly to be sought in soil conditions, and some repressive influence may be suspected in the notably delayed spring on this island and the average low temperature during the growing season that is a feature of its climate.

* * * * *

The northern element in the Nantucket native flora comes to view in its broader aspect in something over one hundred and fifty species that are at least prevailingly more northern in their general distribution. Many of these plants are to be accounted more northern partly in a distributional sense which allows for that equivalency in altitude which has permitted a far southward extension along the Appalachian highlands. Thus while probably less than fifteen Nantucket plants are nowhere found at a more southern point some three times that number are on this island at or near the southern limit of their coastwise range. Other Nantucket northward plants have taken some further way toward the south, a few to be stayed on Long Island, a larger number passing on, not without wide intervals, to find their southern limits in the Pine Barrens and Coastal Plain region of New Jersey. It might be supposed of the maritime species, their way open along the coast as far as had been their bent to follow it, that a freer progress had marked their course. But this has been not at all the case. Some of these plants also have made little or no advance beyond Nantucket, others in like manner with the more inland species have been held at various more southern points.

And it is pertinent here to note that no northward maritime plant of New Jersey is not also a plant of Nantucket, for with the inland species the case is different.

Turning again to Dr. Stone's admirable and enlightening analysis of the flora of southern New Jersey, wherein is much that now enables us better to understand the flora of Nantucket, we find a list of fifty-nine species that range south to New Jersey from the Canadian Maritime Provinces. Forty-one of these plants belong to the Nantucket flora. Of the eighteen that are not found there, ten are also wanting on Long Island and most of the others are all but absent there. And only three of these eighteen plants have been found on Martha's Vineyard. These species are the following:

<i>Lycopodium inundatum</i>	<i>Carex limosa</i>
<i>Schizaea pusilla</i>	<i>Salix lucida</i>
<i>Scheuchzeria palustris</i>	<i>Dalibarda repens</i>
<i>Phalaris arundinacea</i>	<i>Geum strictum</i>
<i>Panicularia obtusa</i>	<i>Hypericum ellipticum</i>
<i>Scirpus subterminalis</i>	" <i>Ascyron</i>
<i>Carex trichocarpa</i>	<i>Polanisia graveolens</i>
" <i>exilis</i>	<i>Aster nemoralis</i>
" <i>livida</i>	<i>Xanthium commune</i>

It is to be noted of these plants whose course has taken them to southern New Jersey, while withholding them from the related floras of Nantucket, Martha's Vineyard and Long Island, that with few exceptions they are of pronounced general northern range. At their eastern limits they approach the seaboard at a relatively high latitude, most of them ranging westward and bearing south as elevation of land or favoring conditions may allow. Their approach to the New Jersey littoral would thus appear to have been by an inland route by way of the Alleghanian highlands that cross the Hudson and the northwestern part of that state. From their places of abundance to the northeast the drift of their range westward and southward has passed to the north of southeastern Massachusetts and borne them on their highway along the hills whence, at a lower latitude, they have found access to the region of the Coastal Plain. All this the evidence would seem to allow us to believe.

Missing thus certain plants not debarred by climatic conditions Nantucket has received into its flora other northern species even less to be expected there. There is some reason to believe that these plants may not have come to Nantucket directly from the north but from a more eastern part of their range. Just as Nantucket's coastal plain flora partly reappears in the Maritime Provinces and even in Newfoundland, so, conversely, do many northward species characteristically associated in these regions find themselves together on Nantucket. Whether this association of their plants, many of which are of wide distribution, points back to some common heritage in the floras of these regions our present knowledge does not assure us. But something of affinity between these far separated floras seems to sketch itself in outline and not without features more clearly drawn. Such plants of Nantucket as *Fragaria terrae-novae*, *Ribes oxyacanthoides* var. *calicicola* and *Antennaria petaloidea* var. *subcorymbosa* would scarcely be looked for from elsewhere than far to the east. If an ancient land connection has conducted southern forms to these far eastern fields, some counter extension of northern forms, at least in the later age of that one time highway, may well have taken place. It is in point that almost directly to the north of Nantucket in eastern Massachusetts, at no greater distance than Essex County, nowhere of much elevation, many northern plants prevail that have obtained no foothold on Nantucket, even though, as we have seen, the island offers locally soils and conditions that are acceptable to northern woodland plants. And nearer at hand, in the Cape Cod region, where many of the conditions repeat those of Nantucket and many features of the flora are the same, there are, well in place, northern plants that have failed to cross the narrow strip of water to Nantucket. And, emphasizing in an unexpected way this slight rift of disconnection between the similar floras of these coastwise tracts, there are many southern plants of the Cape Cod region, not a few of them well established there, although at the extreme northern limit of their range, that on Nantucket are unknown.*

* See, especially, F. S. Collins, Notes on the Flora of lower Cape Cod. *Rhodora* 11: 125-133. 1909. Also, Flora of lower Cape Cod; supplementary note. *Rhodora* 12: 8-10. 1910. Also, Flora of lower Cape Cod; third note. *Rhodora* 13: 19-22. 1911. Also Sinnott, The pond flora of Cape Cod. *Rhodora* 14: 25-34. 1912.

If we may picture this region in the formative period of its present flora as enriched with a vegetation crowded along the shore lines of bays and inlets from sound and sea, just as today in such situations plants have assembling places that delight the botanist, then today's surprises in this inward coastal flora have their explanation. For Nantucket, then perhaps little more than a headland flanked with bleak sand wastes along an exposed outer coast, must have proved a difficult and impermanent refuge to many southern species that would find encouragement and perpetuation along the quiet inward shore lines further to the north.

Fragmentary and unclear as these seeming evidences may be they unite in suggesting a closer affinity in Nantucket's flora with the flora of a more eastern region than with that of the northward mainland more nearly at hand. And if there be revealed in this the broken ties of an ancient relationship it traces itself conformably with the general trend of the coast and with that diagonal northeastward-southwestward sweep of distribution that has given their geographic lines to so many of our plants in their eastern range.

The following northward species of Nantucket are unknown in the coastal region of New Jersey, not many of them passing on even to Long Island.

<i>Phegopteris Phegopteris</i>	<i>Myrica Gale</i>
<i>Isoetes Tuckermanni</i>	<i>Corylus rostrata</i>
<i>Panicularia grandis</i>	<i>Persicaria Hartwrightii</i>
<i>Scirpus occidentalis</i>	<i>Tissa canadensis</i>
“ <i>rubrotinctus</i>	<i>Coptis trifolia</i>
“ <i>pedicellatus</i>	<i>Ribes oxyacanthoides</i> var. <i>calci-</i>
<i>Eriophorum viride-carinatum</i>	<i>cola</i>
<i>Carex utriculata</i>	<i>Fragaria terrae-novae</i>
“ <i>Goodenovii</i>	<i>Argentina litoralis</i>
“ <i>monile</i>	<i>Rubus strigosus</i>
“ <i>sublobiacea</i>	“ <i>triflorus</i>
“ <i>prairea</i>	<i>Lathyrus pilosus</i>
“ <i>diandra</i>	<i>Ilex bronxensis</i>
<i>Lemna trisulca</i>	<i>Epilobium palustre</i>
<i>Juncus balticus</i>	“ <i>lineare</i>
“ <i>bufonius</i> var. <i>halophilus</i>	“ <i>strictum</i>

<i>Epilobium adenocaulon</i>	<i>Agalinis paupercula</i>
<i>Ligusticum scoticum</i>	<i>Galium palustre</i>
<i>Coelopleurum actaeifolium</i>	<i>Linnaea americana</i>
<i>Chamaepericlymenum canadense</i>	<i>Antennaria neodioica</i> var. <i>attenu-</i>
<i>Chiogenes hispidula</i>	<i>ata</i>
<i>Oxycoccus Oxycoccus</i>	<i>Antennaria petaloidea</i> var. <i>sub-</i>
<i>Pneumaria maritima</i>	<i>corymbosa</i>
<i>Mentha glabrata</i>	

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A word remains to be said of the degree of completeness with which the flora of Nantucket is now probably known. The botany of many another region of even greater extent might be very thoroughly chronicled from far less investigation than has been bestowed on Nantucket. Here, as we have seen, are found conditions that ask for close work by the explorer and notwithstanding what has already been accomplished the island today remains a broad and an inviting botanical field. I do not in the least doubt that a systematic exploration continued through an entire season would bring to light many unexpected things and add materially to the list of Nantucket plants. Many a bog, or shrubby patch, or little space of open hillside or plain is alone the home of some noteworthy Nantucket species, and the difficult thickets, especially, cannot yet have yielded all their secrets. When we recall how easily, out of their particular season, many plants may miss the eye, and that there is already a long list of Nantucket species, each one having its single spot somewhere in the fifty square miles that make up the island's area, the possibilities of new discoveries may well stir the later explorer with something of the enthusiasm which animated those who were pioneers.

I should suppose that it were well within the possibilities that 10 per cent or more of the native flora remained to be brought to light, and that an addition of not less than 5 per cent to the number of plants already known might be confidently looked for. My own visits to the island have been never for more than brief periods and have wholly missed the important seasons of mid-summer in the last weeks of July and of August. Nor have I collected on Nantucket in mid-August since 1904, nor in the autumn since 1907, nor explored there at all since 1912. It may be further

useful to the future explorer to speak of certain parts of the island where, especially, careful work remains to be done. In the southwestern quarter that not extensive tract known as "The Woods" which, although treeless, must at some unrecorded period have justified its name, has probably not been visited in every season, and Trot's swamp and the maze of thickets, wet and dry, in Squam, as well as parts of Polpis, are places which not every collector may have cared to penetrate. At Coskaty there is a thickly wooded tract where it is probable few botanists have ever been. Only once and too hurriedly have I gone amid the thick undergrowth of this piece of timber and its complete exploration has remained an object unattained. Nor has my hope yet been realized of sometime traversing the long sand strip between Coskaty and Great Point.

Reading again the pages of Mrs. Owen's catalogue through its perspective of more than thirty years, we are reminded anew of the singular rarity on Nantucket of many of its most interesting plants, and of their close seclusion in those chosen spots that have given them protection. Some of these plants, many of them, indeed, that were discovered by Mrs. Owen, or announced through her by the active group of collectors which she inspired, have rarely been encountered since. And as many as fifteen or twenty species then reported, which we have no reason to believe are not growing somewhere on Nantucket today, remain to be rediscovered by those whose pleasure it shall be to continue the study of the island's botany so long ago begun.